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EXAMINER	
KIM, DAVID S	
ART UNIT	PAPER NUMBER
2613	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	02/12/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/782,653	KINOSHITA ET AL.	
	Examiner	Art Unit	
	David S. Kim	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/19/04, 6/2/06, 11/29/06*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. **Claims 6, 8, and 40-42** are objected to because of the following informalities:

In claim 6, "provided" is used where -- provide -- may be intended.

In claim 8, "plurality of nodes" is used where -- plurality of local nodes -- may be intended.

In claim 40, "optical rings" is used where -- optical ring -- may be intended.

In claim 41, "at at" is used where -- at -- may be intended.

In claim 42, "at at" is used where -- at -- may be intended.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1, 4-5, 11-12, 15-16, 23, and 41-42** are rejected under 35 U.S.C. 102(b) as being anticipated by Katsuyama et al. (WO 02/103939 A1, hereinafter "Katsuyama", references to the English version of U.S. Patent Application Publication No. US 2004/0247318 A1)

Regarding claim 1, Katsuyama discloses:

An optical network, comprising:

an optical ring (ring in Fig. 1);

a plurality of local nodes (NODEs in Fig. 1) coupled to the optical ring;

each local node of the plurality of local nodes configured to receive traffic at an assigned wavelength, disparate from wavelengths assigned to other local nodes (e.g., paragraph [0031]); and

a data center node (CONTROLLER in Fig. 1) coupled to the optical ring and operable to receive traffic from the plurality of local nodes, sort at least some of the traffic by destination (e.g. steps S105-S110

in Fig. 4), and transmit the traffic to a corresponding destination node at the assigned wavelength for that node (e.g., steps S111-S112).

Regarding claim 4, Katsuyama discloses:

The optical network of claim 1, wherein the plurality of local nodes are further operable to pass through traffic at wavelengths disparate from assigned wavelengths without optical-to-electrical conversion ("pass-through" in paragraph [0035]).

Regarding claim 5, Katsuyama discloses:

The optical network of claim 1, wherein the data center node comprises a switch (electric switch 18 in Fig. 3) operable to selectively pass the traffic to a transmitter (any E/O converter 14) transmitting at the assigned wavelength.

Regarding claim 11, Katsuyama discloses:

A data center node, comprising:

a plurality of receivers (O/E converters 13 in Fig. 3) operable to receive traffic including information identifying a destination node;

a data center (components 17-18) operable to selectively pass the traffic to a transmitter associated with the destination node; and

a plurality of transmitters (E/O converters 14) operable to transmit the traffic at a wavelength assigned to the destination node.

Regarding claim 12, Katsuyama discloses:

The data center node of claim 11, wherein the data center comprises a switch (electric switch 18) operable to selectively pass the traffic to a transmitter transmitting at the assigned wavelength.

Regarding claim 15, Katsuyama discloses:

A method of transmitting traffic in an optical network, comprising:

receiving traffic from a plurality of local nodes at a data center node coupled to an optical ring (CONTROLLER 5 in Fig. 1);

sorting the traffic by destination node (e.g., steps S105-S110 in Fig. 4);

transmitting the traffic at a wavelength assigned to the destination node (e.g., step S109); and

receiving traffic at the destination node at the assigned wavelength (e.g., step S112) and passing through traffic not at the assigned wavelength (e.g., "pass-through" in paragraph [0035]).

Regarding claim 16, Katsuyama discloses:

The method of claim 15, wherein the assigned wavelength is disparate from wavelengths assigned to other local nodes (paragraph [0031]).

Regarding claim 23, Katsuyama discloses:

A system for transmitting traffic in an optical network, comprising:

means for receiving traffic from a plurality of local nodes at a data center node coupled to an optical ring (O/E converters 13 in Fig. 3);

means for sorting the traffic by destination node (e.g., steps S105-S110 in Fig. 4);

means for transmitting the traffic at a wavelength assigned to the destination node (e.g., step S109); and

means for receiving traffic at the destination node at the assigned wavelength (e.g. step S112) and passing through traffic not at the assigned wavelength (e.g., "pass-through" in paragraph [0035]).

Regarding claim 41, Katsuyama discloses:

An optical network, comprising:

an optical ring (ring in Fig. 1);

a plurality of local nodes (NODEs in Fig. 1) coupled to the optical ring;

each local node of the plurality of local nodes configured to transmit traffic at an assigned wavelength, disparate from transmitting wavelengths assigned to other local nodes (e.g., paragraph [0031]); and

a data center node (CONTROLLER in Fig. 1) coupled to the optical ring and operable to receive traffic from the plurality of local nodes, sort at least some of the traffic by destination (e.g. steps S105-S110 in Fig. 4), and transmit the traffic destined for the local nodes at least one wavelength of the optical ring (e.g., steps S111-S112).

Regarding claim 42, Katsuyama discloses:

A method of transmitting traffic in an optical network, comprising:

receiving traffic from a data center node coupled to an optical ring (reception of traffic by each NODE from CONTROLLER 5 in Fig. 1), the data center node operable to receive traffic from a plurality of local nodes (reception of traffic by CONTROLLER 5 from each NODE in Fig. 1), sort at least some of the traffic by destination (e.g. steps S105-S110 in Fig. 4), and transmit the traffic destined for the local nodes at least one wavelength of the optical ring (e.g., steps S111-S112); and

transmitting traffic at an assigned wavelength, disparate from transmitting wavelengths assigned to other local nodes (e.g., paragraph [0037]).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. **Claims 2, 6-7, 13-14, 17-18, 24-25, and 27-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsuyama.

Regarding claim 2, Katsuyama does not expressly disclose:

The optical network of claim 1, wherein at least some of the traffic comprises a request for data and the data center node is operable to retrieve the data.

However, a request for data is a standard operation in networks, and retrieval of all traffic is implied to take place through the data center node of Katsuyama.

Regarding claim 6, Katsuyama does not expressly disclose:

The optical network of claim 1, wherein the data center node comprises a services module operable to process a request for data and provided the requested data.

However, a request for data is a standard operation in networks, and notice the operation of components 17-18 in Fig. 3. In the case that data is requested from outside the ring network of Katsuyama through external optical fiber 2, components 17-18 would process such a request and provide such requested data.

Regarding claim 7, Katsuyama does not expressly disclose:

The optical network of claim 6, wherein the requested data comprises audiovisual content (implied by the "digital TV" in paragraph [0033].

Regarding claim 13, Katsuyama does not expressly disclose:

The data center node of claim 11, wherein the data center comprises a services module operable to process a request for data and provide the requested data.

However, a request for data is a standard operation in networks, and notice the operation of components 17-18 in Fig. 3. In the case that data is requested from outside the ring network of Katsuyama through external optical fiber 2, components 17-18 would process such a request and provide such requested data.

Regarding claim 14, Katsuyama does not expressly disclose:

The data center node of claim 13, wherein the requested data comprises audiovisual content (implied by the "digital TV" in paragraph [0033].

Regarding claim 17, Katsuyama does not expressly disclose:

The method of claim 15, wherein the traffic comprises a request for data.

However, a request for data is a standard operation in networks.

Regarding claim 18, Katsuyama does not expressly disclose:

The method of claim 17, further comprising transmitting the requested data to the destination node.

However, a request for data is usually answered by providing that requested data to the node that requested the data. Any suitable requesting node in Fig. 1 would be the destination node.

Regarding claim 24, Katsuyama does not expressly disclose:

The system of claim 23, wherein the traffic comprises a request for data.

However, a request for data is a standard operation in networks.

Regarding claim 25, Katsuyama does not expressly disclose:

The system of claim 24, further comprising a means for providing and transmitting the requested data to the destination node.

However, notice the operation of components 17-18 in Fig. 3. In the case that data is requested from outside the ring network of Katsuyama through external optical fiber 2, components 17-18 would provide such requested data. Then, any suitable E/O converter 14 would transmit the requested data to the corresponding destination node.

Regarding claim 27, Katsuyama discloses:

An optical network, comprising:

an optical ring (ring in Fig. 1);

a plurality of local nodes coupled to the optical ring (NODEs in Fig. 1);

each local node of the plurality of local nodes configured to receive traffic at an assigned wavelength, disparate from wavelengths assigned to other local nodes (e.g.; paragraph [0031]) and operable to pass through traffic at wavelengths disparate from the assigned wavelength without optical-to-electrical conversion ("pass-through" in paragraph [0035]); and

a data center node (CONTROLLER in Fig. 1) coupled to the optical ring and operable to receive traffic from the plurality of local nodes, sort at least some of the traffic by destination (e.g. steps S105-S110 in Fig. 4), and transmit the traffic to a corresponding destination node at the assigned wavelength for that node (e.g., steps S111-S112).

Katsuyama does not expressly disclose:

said data center node operable to receive traffic including request for data and to provide the requested data.

However, a request for data is a standard operation in networks, and notice the operation of components 17-18 in Fig. 3. In the case that data is requested from outside the ring network of Katsuyama through external optical fiber 2, components 17-18 would provide such requested data. Then, any suitable E/O converter 14 would transmit the requested data to the corresponding destination node.

Regarding claim 28, Katsuyama discloses:

An optical network, comprising:

an optical ring (ring in Fig. 1);

a plurality of local nodes coupled to the optical ring (NODEs in Fig. 1);

each local node of the plurality of local nodes configured to receive traffic at an assigned wavelength, disparate from wavelengths assigned to other local nodes (e.g., paragraph [0031]); and

a data center node (CONTROLLER in Fig. 1) coupled to the optical ring and operable to provide centralized storage applications through a service module (e.g., memory 16 in Fig. 3), receive traffic from the plurality of local nodes, sort at least some of the traffic by destination (e.g. steps S105-S110 in Fig. 4), and transmit the traffic to a corresponding destination node at the assigned wavelength for that node (e.g., steps S111-S112).

Katsuyama does not expressly disclose:

said data center node operable to receive traffic including request for data and to provide the requested data.

However, a request for data is a standard operation in networks, and notice the operation of components 17-18 in Fig. 3. In the case that data is requested from outside the ring network of Katsuyama through external optical fiber 2, components 17-18 would provide such requested data. Then, any suitable E/O converter 14 would transmit the requested data to the corresponding destination node.

7. **Claims 3 and 19-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsuyama in view of Elrefaie ("Multiwavelength survivable ring network architectures").

Regarding claim 3, Katsuyama does not expressly disclose:

The optical network of claim 1, wherein the optical ring comprises bi-directional pathways.

However, such rings are extremely common in the art, as exemplified by the ring with bi-directional pathways in Elrefaie (Fig. 6). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to include such bi-directional pathways in the network of Katsuyama. One of ordinary skill in the art would have been motivated to do this to provide the common feature of fault protection for higher network survivability (Elrefaie, p. 1245, col. 1, last paragraph).

Regarding claim 19, Katsuyama in view of Elrefaie discloses:

The method of claim 15, further comprising:

transmitting traffic in a first direction in the optical ring; and

transmitting traffic in a second direction in the optical ring (Elrefaie, the two directions in Fig. 6).

Regarding claim 20, Katsuyama in view of Elrefaie discloses:

The method of claim 15, further comprising selectively positioning a set of switches in each local node to provide protection switching in response to a fault occurring in the optical rings (Fig. 5).

8. **Claims 8-10, 21-22, and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsuyama in view of Ramaswami et al. ("*Optical Networks: A Practical Perspective, 2nd ed.*", hereinafter "Ramaswami").

Regarding claim 8, Katsuyama does not expressly disclose:

The optical network of claim 1, wherein at least one of the plurality of nodes is a hub node operable to selectively pass and terminate individual traffic streams.

However, hub nodes are well known in the art, as shown by Ramaswami (Figs. 10.11-10.12). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to arrange a node in the network of Katsuyama as a hub node, such as one of the plurality of nodes. One of ordinary skill in the art would have been motivated to do this since a single ring is often only part of an overall network, and hub nodes often provide the interconnections between multiple rings that are needed to

provide the communication channels between nodes of different rings (Ramaswami, p. 555, last paragraph).

Regarding claim 9, Katsuyama does not expressly disclose:

The optical network of claim 8, wherein the hub node is a first hub node and is coupled to a second hub node associated with a second optical ring.

However, such multiple hub nodes are well known in the art, as shown by Ramaswami (Figs. 10.11-10.12). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to include such a second hub node associated with a second optical ring in the network of Katsuyama. One of ordinary skill in the art would have been motivated to do this since a single ring is often only part of an overall network, and hub nodes often provide the interconnections between multiple rings that are needed to provide the communication channels between nodes of different rings (Ramaswami, p. 555, last paragraph).

Regarding claim 10, Katsuyama in view of Ramaswami discloses:

The optical network of claim 9, wherein the destination node is located on the second optical ring (Ramaswami, Figs. 10.11-10.12).

Regarding claim 21, Katsuyama in view of Ramaswami discloses:

The method of claim 15, further comprising dropping traffic to a second optical ring (Ramaswami, Figs. 10.11-10.12, "drop" on p. 556, last paragraph).

Regarding claim 22, Katsuyama in view of Ramaswami discloses:

The method of claim 21, wherein the destination node is located on the second optical ring (Ramaswami, Figs. 10.11-10.12).

Regarding claim 26, Katsuyama in view of Ramaswami discloses:

The system of claim 23, wherein the optical ring comprises a first and a second optical ring Ramaswami, two rings in Figs. 10.11-10-12), further comprising means for selectively switching traffic from one ring to the other ring (Ramaswami, hub nodes in Figs. 10.11-10.12).

9. **Claims 29-31 and 35-39** are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsuyama in view of Mukai et al. ("A networkwide backup system with inter-memory autonomic copy mechanism", hereinafter "Mukai").

Regarding claim 29, Katsuyama discloses:

An optical network, comprising:

an optical ring (ring in Fig. 1);

a plurality of local nodes coupled to the optical ring (NODEs in Fig. 1);

each local node of the plurality of local nodes configured to receive traffic at an assigned wavelength, disparate from wavelengths assigned to other local nodes (e.g., paragraph [0031]);

a primary data center node (CONTROLLER in Fig. 1) coupled to the optical ring and operable to receive traffic from the plurality of nodes, sort at least some of the traffic by destination (e.g. steps S105-S110 in Fig. 4), transmit the sorted traffic to a corresponding destination node at the assigned wavelength for that node (e.g., steps S111-S112).

Katsuyama does not expressly disclose:

said primary data center node operable to ***store data from at least some of the traffic from the plurality of nodes*** and to ***transmit a copy of the stored data to a back-up data center node***; and

the back-up data center node operable to receive and ***store the copy*** of the stored data transmitted by the primary data center node ***in response to a back-up event***, receive traffic from the plurality of nodes, sort at least some of the traffic by destination, and transmit the sorted traffic to a corresponding destination node at the assigned wavelength for that node.

However, notice that the primary data center node of Katsuyama already stores data (memory 16 in Fig. 3) regarding address information of destinations (paragraph [0059]). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to arrange this data to originate from the traffic from the nodes. One of ordinary skill in the art would have been motivated to do this in the case that address information changes locally at a destination or in the case that new destinations are

added to the network. In such a case, memory 16 of Katsuyama could be promptly updated of any such changes in the network.

Additionally, the limitations of ***transmitting a copy of stored data to a back-up data center node*** and the back-up data center node ***storing the copy of the stored data in response to a back-up event*** are known in the art, as shown by Mukai (p. 89, col. 1, 1st paragraph; p. 91, memory update in section 3.2). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to include these limitations in the network of Katsuyama. One of ordinary skill in the art would have been motivated to do this to improve reliability of the system (Mukai, p. 89-90, Introduction).

Moreover, as the back-up data center node would perform similar functions as the primary data center node, it would be obvious for the back-up data center node to be operable to similarly perform the primary data center node functions of receiving traffic from the plurality of nodes, sorting at least some of the traffic by destination, and transmitting the sorted traffic to a corresponding destination node at the assigned wavelength for that node.

Regarding claim 30, Katsuyama in view of Mukai does not expressly disclose:

The network of claim 29, wherein at least some of the traffic comprises a request for data and the data center node is operable to retrieve the data.

However, a request for data is a standard operation in networks, and retrieval of all traffic is implied to take place through the data center node of Katsuyama.

Regarding claim 31, Katsuyama in view of Mukai discloses:

The network of claim 30, wherein the plurality of nodes are further operable to pass through traffic at wavelengths disparate from assigned wavelengths without optical-to-electrical conversion (Katsuyama, e.g., "pass-through" in paragraph [0035]).

Regarding claim 35, claim 35 is a method claim that corresponds largely to the network claim 29. Therefore, the recited means in network claim 29 read on the corresponding steps in method claim 35. Claim 35 also includes limitations absent from claim 29. Katsuyama in view of Mukai does not expressly disclose these limitations:

transmitting the copy of the stored data at a ***wavelength assigned to a back-up data center node***;

receiving the copy of the stored data transmitted by the primary data center node and ***passing through traffic not at the assigned wavelength.***

However, notice that these limitations correspond to the communication steps that CONTROLLER 5 implements to communicate with the NODEs in Fig. 1 of Katsuyama (Katsuyama, e.g., paragraph [0035]). As the back-data center node would constitute another NODE to which CONTROLLER 5 would communicate, one could obviously do so by the known communication steps of Katsuyama.

Regarding claim 36, Katsuyama in view of Mukai discloses:

The method of claim 35, wherein receiving and storing the copy of the stored data is in response to a back-up event (Mukai, e.g., event implied by the memory update on p. 91, section 3.2).

Regarding claim 37, Katsuyama in view of Mukai does not expressly disclose:

The method of claim 36, further comprising:

receiving a request for stored data for a destination node; and

transmitting some of the stored data at a wavelength assigned to the destination node.

However, a request for stored data is a standard operation in networks, and notice the operation of components 17-18 in Fig. 3. In the case that data is requested from outside the ring network of Katsuyama through external optical fiber 2, components 17-18 would provide such requested data. Then, any suitable E/O converter 14 would transmit the requested data to the corresponding destination node at its assigned wavelength.

Regarding claim 38, Katsuyama in view of Mukai discloses:

The method of claim 35, wherein the wavelength assigned to the back-up data center node is disparate from wavelengths assigned to other nodes (Katsuyama, e.g., paragraph [0031]).

Regarding claim 39, Katsuyama in view of Mukai discloses:

The method of claim 35 further comprising:

sorting the traffic by destination node (Katsuyama, e.g. steps S105-S110 in Fig. 4);

transmitting the traffic at a wavelength assigned to the destination node and disparate from the a wavelength assigned to the back-up data center node (Katsuyama, e.g., paragraph [0031]); and

receiving traffic at the destination node at the wavelength assigned to the destination node and passing through traffic not at the wavelength assigned to the destination node (e.g., "pass-through" in paragraph [0035]).

10. **Claims 32-34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsuyama in view of Mukai as applied to the claims above, and further in view of Ramaswami.

Regarding claim 32, Katsuyama in view of Mukai does not disclose:

The network of claim 31, wherein at least one of the plurality of local nodes is a hub node operable to selectively pass and terminate individual traffic streams.

However, hub nodes are well known in the art, as shown by Ramaswami (Figs. 10.11-10.12). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to arrange a node in the network of Katsuyama as a hub node, such as one of the plurality of nodes. One of ordinary skill in the art would have been motivated to do this since a single ring is often only part of an overall network, and hub nodes often provide the interconnections between multiple rings that are needed to provide the communication channels between nodes of different rings (Ramaswami, p. 555, last paragraph).

Regarding claim 33, Katsuyama in view of Mukai and Ramaswami does not expressly disclose:

The optical network of claim 32, wherein the hub node is a first hub node and is coupled to a second hub node associated with a second optical ring.

However, such multiple hub nodes are well known in the art, as shown by Ramaswami (Figs. 10.11-10.12). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to include such a second hub node associated with a second optical ring in the network of Katsuyama. One of ordinary skill in the art would have been motivated to do this since a single ring is often only part of an overall network, and hub nodes often provide the interconnections between multiple rings that are needed to provide the communication channels between nodes of different rings (Ramaswami, p. 555, last paragraph).

Regarding claim 34, Katsuyama in view of Mukai does not expressly disclose:

The network of claim 33, wherein the back-up data center node is located on the second ring.

However, locating the back-up data center node at any suitable remote location (Mukai, p. 90, "remote backup" in col. 1, 2nd full paragraph), including on the second ring, is an obvious variation.

11. **Claim 40** is rejected under 35 U.S.C. 103(a) as being unpatentable over Katsuyama in view of Mukai as applied to the claims above, and further in view of Elrefaie.

Regarding claim 40, Katsuyama in view of Mukai does not expressly disclose:

The method of claim 35, further comprising selectively positioning a set of switches in all nodes to provide protection switching in response to a fault occurring in the optical rings.

However, such switches are extremely common in the art, as exemplified by the switches in Elrefaie (Fig. 5). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to include such switches in the network of Katsuyama. One of ordinary skill in the art would have been motivated to do this to provide the common feature of fault protection for higher network survivability (Elrefaie, p. 1245, col. 1, last paragraph).

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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DSK

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